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Claims

Sub. A1 1 A process for removing phenols from an aqueous solution comprising the steps of:

- 5 (a) contacting a mixture comprising the solution and a metal oxide;
(b) forming a phenol compound metal oxide complex; and
(c) removing the phenol metal oxide complex from the mixture.

2. The process of claim 1 wherein the metal oxide is selected from the group consisting of titanium dioxide, vanadium oxide, and zirconium oxide.

3. The process of claim 1 wherein the phenolic compound is lignin or biomass-derived.

10 4. The process of claim 1 further comprising adjusting the mixture to a pH greater than 7.0 after contacting.

Sub. B2 5. The process of claim 1 wherein the metal oxide is selected from the group consisting of manganese dioxide, silicon dioxide, and aluminum oxide, and further comprising adjusting the mixture to a pH in the range of 1.5-11 after contacting.

Sub. A2 15 6. The process of claim 1 further comprising regenerating the metal oxide after removing the phenol metal oxide complex from the mixture.

7. The process of claim 1 wherein the solution is a biomass hydrolyzate and the phenols are biomass-derived.

8. The process of claim 6 wherein regenerating comprises heating in the presence of
20 oxygen.